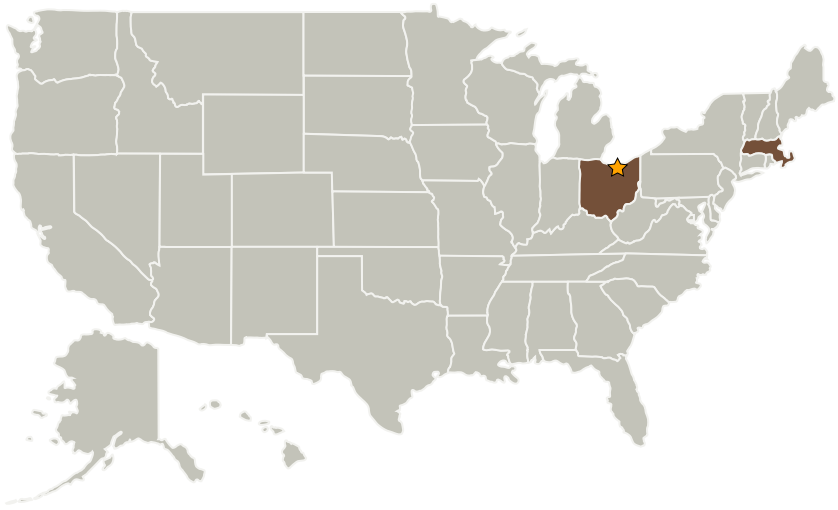
Electrolyzer for NASA Lunar Regenerative Fuel Cells, Phase I

Completed Technology Project (2008 - 2008)

Project Introduction

Water electrolyzer stacks are a key component of regenerative fuel cells, designed to replace batteries as a means of storing electric energy on the lunar surface. The design and demonstration of an innovative water electrolyzer cell is proposed. The cell design will be significantly smaller and lighter than previous aerospace electrolyzers designed and built by Giner Electrochemical Systems, LLC. The new cell will support high-efficiency electrolysis at pressures up to 2,000 psi. Test data will be used to calibrate electrolyzer performance models. These models will, in turn, be used to guide design decisions for regenerative fuel cells relative to the electrolyzer stack and maximum operating/gas-storage pressures of the regenerative fuel cell. A preliminary analysis of an advanced cell frame new thermoplastic material will be conducted to determine its suitability for use in water electrolyzers. Successful completion of the first phase will lead to the development of a demonstration stack in a second phase.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Giner Electrochemical Systems, LLC	Supporting Organization	Industry	Newton, Massachusetts

Primary U.S. Work Locations	
Massachusetts	Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Timothy Norman

Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.2 Energy Storage
    - TX03.2.2 Electrochemical: Fuel Cells